



*United
States
Steel
Corporation*

GARY WORKS
1 NORTH BROADWAY
GARY, INDIANA 46402

US EPA RECORDS CENTER REGION 5



522915

June 28, 1985

RECEIVED

JUL 02 1985

SWB-AIS
U.S. EPA, REGION V

Dave Stringham
Chief, Solid Waste Branch
United States Environmental
Protection Agency
13th Floor - 5H
P.O. Box A3587
Chicago, Illinois 60690

Dear Mr. Stringham:

RE: Request for Information entitled "Certification Regarding
Potential Releases from Solid Waste Management Unit"

The attached information is in response to your request
for information included with your letter of May 3, 1985. The
date for U.S. Steel to respond to this request was extended until
June 28, 1985.

If there are any questions concerning the information
submitted herewith, please call Anthony Spinola (412)-825-2067 or
Vic Nordlund (219)-944-3385.

G. E. Govert
General Manager
Gary Works

JC/dn

COPY 2

251-11

CERTIFICATION REGARDING POTENTIAL RELEASES FROM
SOLID WASTE MANAGEMENT UNIT

FACILITY NAME: U. S. Steel - Gary Works

EPA I.D. NUMBER: IND005444062

LOCATION CITY: Gary

STATE: Indiana

1. Are there any of the following solid waste management units (existing or closed) at your facility? NOTE - DO NOT INCLUDE HAZARDOUS WASTES UNITS CURRENTLY SHOWN IN YOUR PART B APPLICATION

	YES	NO
• Landfill	X	
• Surface Impoundment	X	
• Land Farm		X
• Waste Pile		X
• Incinerator		X
• Storage Tank (Above Ground)	X	
• Storage Tank (Underground)	X	
• Container Storage Area	X	
• Injection Wells	X	
• Wastewater Treatment Units	X	
• Transfer Stations		X
• Waste Recycling Operations	X	
• Waste Treatment, Detoxification		X
• Other		X

2. If there are "Yes" answers to any of the items in Number 1 above, please provide a description of the wastes that were stored, treated or disposed of in each unit. In particular, please focus on whether or not the wastes would be considered as hazardous wastes or hazardous constituents under RCRA. Also include any available data on quantities or volume of wastes disposed on and the dates of disposal. Please also provide a description of each unit and include capacity, dimensions, location at facility, provide a site plan if available.

See Attachment I

NOTE: Hazardous waste are those identified in 40 CFR 261. Hazardous constituents are those listed in Appendix VIII Of 40 CFR Part 261.

3. For the units noted in Number 1 above and also those hazardous waste units in your Part B application, please describe for each unit any data available on any prior or current releases of hazardous wastes or constituents to the environment that may have occurred in the past or still be occurring.

Please provide the following information

- a. Date of release
- b. Type of waste released
- c. Quantity or volume of waste released
- d. Describe nature of release (i.e., spill, overflow, ruptured pipe or tank, etc.)

All solid waste management facilities operated at Gary Works
are managed to avoid any leaks or releases from such facilities.

Based upon a review of USSC's record there is no release data to
report.

4. In regard to the prior releases described in Number 3 above, please provide (for each unit) any analytical data that may be available which would describe the nature and extent of environmental contamination that exists as a result of such releases. Please focus on concentrations of hazardous wastes or constituents present in contaminated soil or groundwater.

Not Applicable.

For purposes of this question it is assumed ground water
monitoring report information is not requested, since it has been
submitted to Region V on an ongoing basis, as well as in summary
with the July 1, 1985 Part B submittal.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the submittal is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. (42 U.S.C. 6902 et seq. and 40 CFR 270.11(d))

Gerald E. GOVERT, General Manager-Gary Works Complex

Typed Name and Title


Signature

June 28, 1985

Date

"ATTACHMENT I"

UNITED STATES STEEL CORPORATION
ENGINEERING - STEEL

PLANT ENGINEERING
GARY WORKS

June 28, 1985

SOLID WASTE MANAGEMENT UNITS

A) Landfills

1) BOP Sludge Area -

This area has been designated as the disposal location for various non-hazardous plant generated sludges which include, but are not limited to, air pollution control sludges, waste water treatment sludges, boiler house wastes and non-recyclable oil and grease sludges. All wastes that are currently placed in this facility are non-hazardous. Approximately 400,000 tons of material were placed in this facility in 1984. The current dimensions of this facility are approximately 550' x 1100' x 15'. However, prior to 1980, the dimensions of this facility extended to approximately 1000' to the north of the current location. There are no existing records which detail past disposal activities in this area. (See Drawing No. GW-276873 for site location)

2) Refuse Landfill -

This area has been designated as the disposal location for plant generated refuse, demolition debris, waste wood products (i.e. paper, railroad ties) and tires. All wastes currently placed in this facility are non-hazardous. The historic dimensions of this facility are believed to have extended beyond the current 1800' x 500' x 40' but there are no drawings to verify this. Approximately 50,000 tons of material are annually placed into this facility. (See Drawing No. GW-276873)

3) Old Tar Disposal
Pits -

There may have been scattered tar disposal locations throughout the east landfill area. These areas were all closed prior to 1980 and there is no documentation which identifies which type of wastes or quantities were placed into these facilities. However, it is believed that past disposal practices were similar to those currently practiced. Currently, Gary Works has a permitted tar disposal location which receives approximately 10,000 tons of tar decanter sludge, tar tank clean outs and tar spills each year. (See Drawing No. GW-276873 for site locations)

A) Landfills (Continued)

4) Old Garbage Dump -

From verbal discussion it is believed there was a disposal location designated for plant generated garbage. However, due to the lack of documentation and knowledge of current disposal practices, it is believed that this may have been an old refuse landfill. All food wastes (garbage) are currently disposed of off-site. This location is believed to have been located northeast of the current BOP sludge area. (See Drawing No. GW-276873 for site location)

5) Marblehead Lime Dust
Pits -

There are at least three areas that have either been used in the past or are currently in use for disposal of a burnt lime dust which is collected at the Marblehead lime kilns directly west of Gary Works. The lime dust has been disposed of in these areas in excess of ten years. These disposal locations cover an area of approximately 35 acres. Approximately 100,000 tons of material are disposed of in this location each year. (See Drawing No. GW-276874 for site location)

✓ 6) Stockton Pond Sludge
Disposal -

Verbal discussion indicates neutralized acid lagoon sludge was disposed of on the north and south sides of the Stockton Lagoon. It is believed to have continued for less than 1 year (around mid 1977.) There is no documentation on the quantity of waste placed at this location. (See Drawing No. GW-276874 for site location)

7) Slag Disposal -

Presently on both the East and West ends of the plant slag is being processed and stored. Since the start-up of Gary Works the vast majority of facilities have been built on slag filled or slag levelled land.

UNITED STATES STEEL CORPORATION
ENGINEERING - STEEL

Waste Management Units

PLANT ENGINEERING
GARY WORKS

June 28, 1985
Page 3 of 10

B) Surface Impoundment

- ✓ 1) ST-17 Final Oil
Separator -

This facility is on unlined below grade impounding which acts as a final catch basin for oil and suspended solids which may enter the clean water sewers on Gary Works west side finishing mills prior to discharge to the Grand Calumet River (regulated under NPDES.) The lagoon has a daily flow-through rate of 20 MGD. The wastes collected in this facility are non-hazardous. Approximately 250,000 gallons of waste oil can be collected from this facility each year and 1500 tons of sludge may be removed from this facility each year. The dimensions of this facility are approximately 280' x 220' x 14'. (See Drawing No. GW-282825 for site location)

- ✓ 2) ST-17 Final Oil
Separator Sludge
Drying Bed -

This facility is an above ground impoundment which is used to dry the 1500 tons of sludge that are removed from the Final Oil Separator each year. The drying bed has an underdrain system which directs the leachate back into the separators. This facility covers approximately 1/2 acre in surface area. The drying bed is generally dug out once per year. (See Drawing No. GW-282825 for site location)

- ✓ 3) Terminal Treatment
Plant Sludge Drying
Beds -

This facility consists of 3 unlined above grade impoundments. The drying beds are used to dry approximately 40,000 tons of non-hazardous sludge which is generated in the Terminal Treatment Plant flocculator-clarifiers each year. The drying beds cover an area of approximately 3.5 acres. The drying beds are generally dug out once per year during the summer months. (See Drawing No. GW-282825 for site location)

B) Surface Impoundment (Continued)

✓ 4) No. 3 Neutralized Waste
Acid Lagoon -

This facility was abandoned prior to 1980 and subsequently filled in with slag. The sludge collected in this lagoon would possibly be currently classified as a hazardous waste (K062). The sludge accumulated in this lagoon was originally collected in the Nos. 1 and 2 Neutralized Acid Lagoons and later dredged into this lagoon for further drying prior to disposal. There is no documentation available that indicates the volume of material treated in this facility. The approximate dimensions of this facility are 575' x 200'. (See Drawing No. GW-276874 for site location.)

✓ 5) Bar Mills WPL Disposal
Lagoons -

These lagoons were abandoned prior to 1980 and subsequently filled. The lagoons were used as a disposal impoundment for waste pickle liquor that was generated from the pickling of steel bars. The material would currently be classified as a hazardous waste (K062.) There is no documentation available which indicates the volume of material disposed of in this facility. The approximate dimensions of these lagoons are 400' x 400'. (See Drawing No. GW-282826 for site location)

✓ 6) Primary Mills WPL
Disposal Lagoon -

This lagoon was abandoned prior to 1980 and subsequently filled. The lagoon was used as a disposal impoundment for waste pickle liquor that was generated from pickling steel billets and rails. The material would currently be classified as a hazardous waste (K062.) There is no documentation available which indicates that volume of material disposed of in this lagoon. The approximate dimensions of this lagoon are 100' x 50'. (See Drawing No. GW-282826 for site location)

Waste Management Units

June 28, 1985
Page 5 of 10

B) Surface Impoundment (Continued)

✓ 7) Continuous Pickle WPL
Disposal Lagoon -

This facility was abandoned and covered during the 1960's. The lagoon was used as a disposal lagoon for the waste pickle liquor generated from the continuous pickling of steel coils. The material would currently be classified as a hazardous waste (K062.) There is no documentation available which indicates the volume of material disposed of in this lagoon. The approximate surface area covered by this facility is believed to have covered 5 acres. (See Drawing No. GW-282825 for approximate site location)

8) Terminal Lagoons -

These lagoons are used as basins for treating waste water generated in the primary and steelmaking portions of Gary Works. The lagoons treat approximately 80 MGD of waste water. Heavy solids settle to the bottom of the lagoons while oils float to the surface. The solids are periodically dredged out of the lagoons and directed by pipeline to the Buchanan Street Basins. The oil is skimmed and collected in holding tanks prior to recycling. All wastes collected in these lagoons are non-hazardous. Due to reduced Gary Works operations, the volume of material collected in these lagoons has dropped substantially from that collected two years ago. In 1982, approximately 40,000 tons of sludge was removed from this facility while approximately 5,000 gallons of waste oil was collected. There is no accurate estimate of the volume of material currently being collected. The effluent from this facility is discharged into the Grand Calumet River and is regulated under NPDES. These lagoons cover an area of approximately 10 acres. (See Drawing No. GW-282826 for site location)

B) Surface Impoundment (Continued)

9) Buchanan Street
Basins -

The Buchanan Street Basins are below grade impoundments used for drying the sludge dredged from the Terminal Lagoons since their installation in 1970. All material stored in these basins is non-hazardous. At this time there is estimated to be 200,000 yd³ of material stored in these basins. These basins cover an area of approximately 15 acres. (See Drawing No. GW-282826 for site location)

10) Mason Basins -

The Mason Basins were used as below grade dewatering basins for the wet flue dust sludge that was removed from the blast furnace cooling and gas cleaning water. Subsequent to 1981 use of these basins was discontinued except for emergency use only. The sludge that accumulated in this facility is non-hazardous. There is no documentation available which indicates the volume of material treated in these basins. All material accumulated in these basins has been removed and the emergency feed disconnected. The basins cover an area of approximately 5 acres. (See Drawing No. GW-282826 for site location)

C) Above Ground Storage Tanks

1) Tube Works Waste Oil
Storage Tank -

This tank holds approximately 1000 gallons of waste oil collected at the Tube Works Waste Water Recycle Plant. This oil is non-hazardous. Approximately 20,000 gallons of waste oil are collected and stored in this tank prior to recycling. (See Drawing GW-276873 for site location)

C) Above Ground Storage Tanks (Continued)

- 2) GW-3 River Skimmer
Waste Oil Storage
Tanks -

This tank holds approximately 5,000 gallons of waste oil collected at the Grand Calumet River Skimmer near outfall GW-3. This oil is non-hazardous. Less than 1,000 gallons of waste oil are collected and stored in this tank prior to recycling. (See Drawing No. GW-282826 for site location)

- ✓ 3) Tube Works West Side
Waste Pickle Liquor
Storage Tank -

This 20,000 gallon rubber lined tank is used to accumulate waste pickle liquor on the west side of Gary's Tube Works. The WPL that is collected in this tank is generated from the pickling of steel pipe and is currently classified as a hazardous waste (K062.) Approximately 650,000 gallons of WPL is processed through this tank on an annual basis. The WPL is disposed of in Gary Works Waste Acid Treatment Plant. (See Drawing No. 282826 for site location)

- 4) Terminal Lagoons Waste
Oil Storage Tanks -

There are two 10,000 gallon waste oil storage tanks at the terminal lagoons. The tanks accumulate non-hazardous waste oil that is collected at this facility. Less than 5,000 gallons of waste are collected at this facility on an annual basis. The waste oil collected at this facility is recycled on site. (See Drawing No. GW-282826 for site location)

- 5) 18"-#2 Bar Mill Waste
Oil Storage Tank -

This 5,000 gallon tank is used to collect waste oil prior to recycling. The oil collected in this tank is non-hazardous. Less than 5,000 gallons of waste oil is currently collected at this facility on an annual basis. (See Drawing No. GW-282826 for site location)

C) Above Ground Storage Tanks (Continued)

- 6) 84" Hot Strip Mill
Waste Oil Storage
Tanks -

There are two 10,000 gallon waste oil storage tanks at this facility. The two tanks accumulate non-hazardous oil prior to recycling. A total of approximately 300,000 gallons are processed through these two tanks. (See Drawing No. GW-282825 for site location)

- 7) North Sheet Mill Waste
Oil Storage Tanks -

There are currently two waste oil storage tanks in service at this facility with a storage capacity of approximately 100,000 gallons. No oil is currently collected at this facility. The tanks are totally enclosed within a building with a cement pad. The oil is non-hazardous and is accumulated prior to recycling. (See Drawing GW-282826 for site location)

- ✓ 8) Terminal Treatment
Plant Waste Oil
Storage Tanks -

There are three 50,000 gallon storage tanks that accumulate waste oil that is collected at the Terminal Treatment Plant. The oil that is collected at this facility is currently classified as hazardous (K062.) The tanks are totally enclosed within a building with a cement pad. Approximately 1.5 - 2 million gallons of waste oil are collected at this facility each year. The oil is accumulated at this facility prior to on-site recycling. (See Drawing No. 282825 for site location)

- 9) ST-17 Waste Oil
Storage Tank -

This 5,000 gallon tank is used to accumulate non-hazardous waste oil prior to on-site recycling. Approximately 250,000 gallons of waste oil are processed through this tank each year. (See Drawing No. GW-282825 for site location)

C) Above Ground Storage Tanks (Continued)

10) Waste Acid Treatment
Plant Waste Pickle

Liquor Storage Tanks - There are two 150,000 gallon rubber lined storage tanks which accumulate WPL prior to recycling, disposal down the deep well or neutralization. Approximately 15 to 20 million gallons of WPL are processed through these tanks annually. Waste pickle liquor is currently classified as a hazardous waste (K062.) (See Drawing No. GW-282825 for site location)

D) Underground Storage Tanks

A plantwide study is currently underway to identify the underground storage tanks located throughout the plant. Location, size and other pertinent data will be forwarded to the designated agencies in the future.

E) Container Storage Area

1) Abandoned Barrel
Storage Yard -

This area was designated as the location where empty "deposit" drums were accumulated prior to pick up by deposit drum companies. There are no documents which indicate the number of drums processed through this facility. All drums have been removed from this location. (See Drawing No. GW-282826 for site location)

2) New Barrel Storage -

This area was located inside an abandoned bar mill. Empty barrels were brought to this location where they were segregated into three groups: 1) scrap, 2) deposit, and 3) recycle. Deposit drums and recycle drums were accumulated prior to pick up by outside firms. This practice has been discontinued and the drums are now collected and sent out from the locations that use them. (See Drawing No. GW-282826 for site location)

F) Injection Wells

Gary Works has one injection well which is used for injection of WPL (K062). Gary has submitted a U.I.C. permit application for this well. (See Drawing No. GW-282825 for site location)

Waste Management Units

June 28, 1985
Page 10 of 10

G) Waste Water Treatment Units

See Attachment II. Please note performance and capacity data listed are "Design" parameters, actuals vary with operational levels. This summary excludes the recycle systems at the 84" Hot Strip Mill, No. 2 Slab Caster and Tube Works.

H) Waste Recycling Operations

1) Waste Oil Recycling - Gary Works has a facility which recycles all plant generated waste oil into either fuel oil or lubricating oils. The oils that are treated in this plant include the waste oils generated at the Tube Works Recycle Plant, GW-3 River Skimmer, North Sheet Mill Wastewater Treatment Plant, 84 Inch Hot Strip Mill Wastewater Recycle Plant, ST-17 Final Oil Separator and Terminal Treatment Plant. The facility currently processes between two and five million gallons of waste oil per year through a series of tanks located at the facility. All solids and wastewater generated at the recycle plant are discharged into a sewer which leads to the Terminal Treatment Plant. This facility is currently managed by an outside contractor. (See Drawing No. GW-282825 for site location)

2) Waste Pickle Liquor
Recycling -

Gary Works has an on-site contractor which recycles hydrochloric acid waste pickle liquor. The site location is leased from Gary Works and is operated and controlled entirely under the direction of the contractor. (See Drawing No. GW-282825 for site location. Contractor operating facility is KA Steel.)

"ATTACHMENT II"

UNITED STATES STEEL CORPORATION
USS ENGINEERING

PLANT ENGINEERING
GARY WORKS
June 20, 1980

WATER TREATMENT FACILITIES
U. S. STEEL - GARY PLANTS

USS TUBING SPECIALTIES - Outfall 002 (GW-1)

- I. Waste Acid Disposal - Placed in operation July 1968
 - A. Type of Treatment

Facility consists of a collection system sump and storage tank with disposal in the deep well at Gary Works.
 - B. Design
 1. Flow - 3,900 gallons per day.
- II. No. 4 Seamless Tube Mill - Placed in operation July 1968
 - A. Type of Treatment

Mechanically cleaned scale pit consisting of two (2) cells, scale collectors, oil skimmers and oil collection tank.
 - B. Design
 1. Flow - 6,700 GPM
 2. Retention Time - 1.5 Minutes
 - C. Effluent discharged to Terminal Scale Pit
- III. Terminal Scale Pit - Placed in operation August 1968.
 - A. Type of Treatment

Mechanically cleaned scale pit consisting of three (3) cells, scale collectors, three (3) oil skimmers, waste oil collection tank and control house.
 - B. Design
 1. Flow - 10,500 GPM
 2. Retention Time - 10 Minutes
 - C. Effluent discharged to GW-1 sewer system.

GARY WORKS COKE PLANT - (No Process Water Discharge To Outfalls)

I. Process Water Disposal System - Placed in operation January 1969

A. Type of Treatment

System includes sumps, piping, storage tanks and pumps to segregate and dispose of contaminated water into two (2) categories - high ammonia and low ammonia process water.

B. Design

1. High ammonia water distributed as makeup to coke quench system.
2. Low ammonia water pumped to City of Gary sanitary sewer system or up to 80% as makeup to the quench system.

II. Coke Plant Boilerhouse Water Treatment System - To be placed in operation August 1980.

A. Type of Treatment

System includes a thickener and filter press to provide a sludge dewatering system for the boiler feedwater softening process, a new 48" diameter sewer to the existing GW-1 sewer system to handle additional flow from an expanded condensate recovery system and a collection and recycle system for the ash hopper spray water.

B. Design

1. Sludge Thickener and Holding Tank
 - a. Flow - 85 GPM
 - b. Retention Time - 6 Hours
 - c. Diameter - 24'-0"
 - d. Sidewall Height - 18'-0"

GARY WORKS COKE PLANT (continued)

II. (Continued)

B. Design (continued)

2. Filter Press

- a. Flow - 102 GPM
- b. Pressure Differential - 100 PSIG
- c. Capacity - 130 ft.³ of Filter Cake per Cycle
- d. Cake Moisture Content - 46%
- e. Dry Solids - 20,425 #/Day

C. No Process Water Discharge To Outfalls

GARY WORKS SINTER PLANT AREA - Outfall 017 (GW-5)

I. No. 3 Sinter Plant Air Quality Control Water Treatment System
- Placed in operation April 1980

A. Type of Treatment

Electrodynamic venturi scrubbers (EDV) will be installed on three (3) sinter line windbox exhaust systems at No. 3 Sinter Plant. Each EDV system utilizes a recirculating water system with a blowdown to the wastewater treatment system.

The wastewater treatment system is a 3,600 GPM closed loop system with water recirculation back to the scrubber except for a blowdown of 15-22 GPM to control chloride and solids concentration. This discharge is directed to GW-5 for treatment by the blast furnace recycle blowdown treatment facility. The treatment system includes units for oil removal, reseedling, neutralization, flocculation, clarification, sludge thickening, filtration, sludge disposal and treated water reuse.

GARY WORKS SINTER PLANT AREA (continued)

I. (Continued)

B. Design

1. Tube Settler/Clarifiers - Four (4)
 - a. Flow - 900 GPM Each
 - b. Individual Hoppers on the Bottom.
 - Number - 8
 - Size - 40' Long x 12' Wide x 13' Deep
2. Calcium Sulfate Thickeners - Two (2)
 - a. Flow - 170 GPM Each
 - b. Individual Hoppers on the Bottom
 - Number - 4
 - Size - 20' Long x 12' Wide x 13' Deep
3. Calcium Sulfate Filter Presses - Two (2)

One Required - One Stand-By

 - a. Flow - 200 GPM
 - b. Filtration Pressure - 150 PSIG
 - c. Filtration Area - 960 ft.²
 - d. Filter Cake Capacity - 36 ft.³
4. Sinter Sludge Filter Presses - Two (2)

One Required - One Stand-By

 - a. Flow - 200 GPM
 - b. Filtration Pressure - 150 psig
 - c. Filtration Area - 744 ft.²
 - d. Filter Cake Capacity - 28 ft.²

C. Effluent discharged to GW-5 sewer system for treatment by the blast furnace recycle blowdown treatment facility.

GARY WORKS BLAST FURNACE AREA - Outfall 017 (GW-5)

I. No. 13 Blast Furnace Gas Cleaning System
- Placed in operation March 1974

A. Type of Treatment

Water treatment facilities consist of a clarifier equipped with oil skimmer, vacuum filters, chemical feeding equipment, an evaporator cooling tower, and the associated pumps, piping and storage to enable recycling of the gas cleaning water.

B. Design

1. Clarifier

- a. Flow - 3,050 GPM
- b. Retention Time - 110 minutes
- c. Diameter - 90 ft.
- d. Sidewall Height - 16.5 ft.

C. Blowdown is consumed by slag quench with no discharge to outfalls.

II. Blast Furnace Water Recycle System-Furnace Nos. 4, 6, 7, 8, 9 and 10 - Placed in Operation July 1979

A. Type of Treatment

Facilities are installed to recycle approximately 49.4 million gallons per day of blast furnace wastewater. The treatment system consists of the existing three (3) scalper-clarifiers and settling basins, a new 9-cell induced draft type cooling tower with chemical feed facilities, hot and cold well pumps and return piping.

B. Design

1. Scalper-Clarifiers and associated trash rack, diversion gates, chemical feed and control house.

- a. Placed in Operation - 1969
- b. Flow - 35,000 GPM Each
- c. Retention Time - 8 Minutes Each
- d. Effluent discharged to blast furnace settling basins.

GARY WORKS BLAST FURNACE AREA - Outfall 017 (GW-5) (cont'd)

II. (Continued)

B. Design (cont'd)

2. Blast Furnace Settling Basin - Two (2)
 - a. Placed in Operation - 1969
 - b. Flow - 50,000 GPM
 - c. Retention Time - 110 Minutes
 - d. Effluent pumped over a cooling tower and returned to the furnaces.
3. Induced Draft Water Cooling Tower
 - a. Placed in Operation - July 1979
 - b. Capacity - 35,000 gpm
 - c. Number of Units - 9
 - d. Hot well pumps (5), Cold well pumps (7) and return piping.
 - e. Blowdown directed to the Blast Furnace Blowdown Treatment System.
4. Sludge Dewatering System:

Scalper underflow pumped to Blowdown Treatment System for solids removal.

III. Blast Furnace Recycle Blowdown Treatment System
- To be placed in operation in August 1980

A. Type of Treatment

The treatment system consists of (1) effluent pretreatment and associated pressure filtration and sludge dewatering; (2) alkaline chlorination, (3) carbon adsorption.

GARY WORKS BLAST FURNACE AREA - Outfall 017 (GW-5) (cont'd)

III. (Continued)

B. Design

1. Effluent Pretreatment System

- a. Cyclone Separators - 3,800 GPM per Cycle
- b. Spiral Classifier - 150 GPM
- c. Disc Type Vacuum Filters - Two (2) - 340 Tons per day.
- d. Thickener - Clarifiers - Two (2) - Capacity rated at 275,000 Gallon each
 1. Flow - 3,780 GPM
 2. Retention Time - 2.5 Hours
 3. Following clarification the ph adjusted blowdown will be pressure filtered.
- e. Pressure Filters - Five (5)
 1. Flow - 3,825 GPM
 2. Filtration Rate - 8 GPM/sq. ft.
 3. Size - 12 ft. Diameter x 16 ft.
 4. The effluent is now directed to the alkaline-chlorination system.

2. Alkaline-Chlorination System

- a. First-Stage Destruction Cells - Two (2)
 1. Capacity - 28,000 gals. each
 2. Retention Time - 20 Minutes
- b. One (1) Secondary ph Adjustment Cell
 1. Capacity - 10,000 gals.
- c. Second-Stage Destruction Cells - Four (4)
 1. Capacity - 28,000 gals. - each
 2. Retention Time - 40 Minutes

GARY WORKS BLAST FURNACE AREA - Outfall 017 (GW-5) (cont'd)

III. (Continued)

B. Design (cont'd)

3. Carbon Adsorption System

a. Carbon Adsorption vessels - Six (6)

1. Flow - 3,500 GPM
2. Pressure - 75 PSIG
3. Temperature - 175°F.
4. Weight of Carbon - 40,000 lbs.
5. Size - 16'-0" Diameter by 13'-3" Straight Side Adsorbors

C. 4 MGD discharged to Outfall 017 (GW-5)

GARY WORKS CONTINUOUS CASTER AREA - Outfall 020 (GW-7A)

I. Continuous Caster Scale Pit - Placed in Operation in April 1967.

A. Type of Treatment

Mechanically cleaned scale pit consisting of three (3) cells, scale collectors and oil skimmers.

B. Design

1. Flow - 27,160 GPM
2. Retention Time - 13 Minutes

C. Effluent discharged to GW-7A sewer system

GARY WORKS STEEL PRODUCING AREA - Outfall 028 (GW-10A) and Outfall 030 (GW-11A)

I. No. 1 BOP Shop Gas Cleaning System

A. Type of Treatment

System consists of two (2) mechanically cleaned clarifiers in series, two (2) centrifuges, vacuum filters and associated chemical feed equipment and control houses.

The No. 1 BOP Shop Gas Cleaning water is pumped from the primary clarifier to the secondary clarifier located at No. 2 Q-BOP Shop for further clarification and the effluent discharged to GW-10 sewer system.

B. Design

1. Primary Clarifier

- a. Placed in Operation - December 1965
- b. Flow - 600 GPM
- c. Retention Time - 9 Hours
- d. Diameter - 60 ft.

2. Secondary Clarifier - (1A)

- a. Placed in Operation - July 1974
- b. Flow - 1,500 GPM
- c. Retention Time - 11 Hours
- d. Diameter - 120 ft.

C. Effluent discharged to GW-10 sewer system

II. No. 2 Q-BOP Gas Cleaning System - Placed in Operation February 1973

A. Type of Treatment

System consists of one (1) clarifier, two (2) vacuum filters, chemical feed equipment, two (2) evaporator cooling towers for recycled hood cooling and gas cooling water and control house.

UNITED STATES STEEL CORPORATION - 10 -
USS ENGINEERING
WATER TREATMENT FACILITIES
U. S. STEEL - GARY PLANTS

PLANT ENGINEERING
GARY WORKS
June 20, 1980

GARY WORKS STEEL PRODUCING AREA
Outfall 028 (GW-10A) and Outfall 030 (GW-11A)

II. (Continued)

B. Design

1. Clarifier

- a. Flow - 1,200 GPM
- b. Retention Time - 70 minutes
- c. Diameter - 120 ft.

C. Effluent discharged to GW-10 sewer system.

GARY WORKS PRIMARY, BAR AND PLATE MILL AREA - Outfall 028 (GW-10A) and
Outfall 030 (GW-11A)

I. Terminal Lagoons Treatment System - Placed in Operation
January 1970

A. Type of Treatment

Overflow from No. 1 BOP Shop and No. 2 Q-BOP gas cleaning clarifiers, Primary Mills, Bar and Plate Mill scale pits is diverted to the Terminal Lagoons for final treatment.

B. Design

1. Collection System

- a. There are three (3) pumping stations (GW-10, GW-11, GW-12) each equipped with trash rack, pumps, oil skimmers, and waste oil storage tanks.
- b. Flows and Capacities

<u>Pump Station</u>	<u>No. Pumps</u>	<u>Normal Flow GPM</u>	<u>Design Flow GPM</u>	<u>Max. Flow GPM</u>
GW-10	4	35,000	40,000	50,000
GW-11	3	20,000	35,000	45,000
GW-12	4	42,000	45,000	55,000

GARY WORKS PRIMARY, BAR AND PLATE MILL AREA
Outfall 028 (GW-10A) and Outfall 030 (GW-11A) (cont'd)

I. (Continued)

B. Design (cont'd)

2. Removal of Solids and Oil

- a. There are three (3) lagoons each with an oil skimmer, oil storage tanks, overflow launders and one (1) common floating dredge.
- b. With design flow, detention time in three (3) lagoons is 3.75 hours.

3. Oil Removal from River

- a. A floating boom and oil skimmer downstream of GW-3 outfall.
- b. A floating boom, oil skimmer and waste oil storage tank are located unstream of GW-5 outfall.
- c. Floating booms and diversion chambers at GW-10 and GW-12 Pump Stations.

- C. Effluent from No. 3 (East) Terminal Lagoon is discharged into GW-10A. Effluent from Nos. 1 and 2 (West) Terminal Lagoons is discharged into GW-11A.

II. Bar Mill Pickling Area - Waste Pickle Liquor Containment System
- Placed in Operation in February 1979

A. Type of Treatment

System consists of pumps, piping and storage tanks to separate and collect the waste pickle liquor and rinse water from two (2) pickling operations located in the bar mill area.

B. Design

1. Waste Pickle Liquor System

Pumps and piping are installed to collect the spent acid into two (2) 70,000 gallon storage tanks. The acid is transported via tank truck to the Waste Acid Plant for disposal.

GARY WORKS PRIMARY, BAR AND PLATE MILL AREA
Outfall 028 (GW-10A) and Outfall 030 (GW-11A) (cont'd)

II. (Continued)

B. Design (cont'd)

2. Rinse Water System

A new collection system, sump and pumps has been installed to pump the rinse water from the five rinse tanks at the Pickling Plant to GW-12 sewer whose effluent is treated in the Terminal Lagoons.

- C. There is no outfall discharge from the waste pickle liquor system. The rinse water is discharged to GW-12 sewer.

GARY WORKS FINISHING FACILITIES - Outfall 034 (ST-17) and Outfall 039 (STL-6)

- I. Terminal Treatment Plant - Outfall 034 (ST-17)
- Placed in Operation June 1967
- Expansion No. I - June 1969
- Expansion No. II - June 1980

A. Type of Treatment

Facility consists of mixing tanks, A.P.I. separators, flocculator-clarifiers, chemical feeding equipment and sludge dewatering equipment to treat the oily and metallic wastes from the finishing facilities.

B. Design

1. Flow - 22,300 GPM (original)
15,000 GPM (revised)
2. Pump Stations
- | | |
|--|-------------|
| a. "N" - North Sheet Mill and North Pickle | - 4,000 GPM |
| b. "S-1" - South Sheet Mill & South Pickle | - 9,350 GPM |
| c. "T-1" - Tin Mill | - 2,850 GPM |
| d. Electro Galvanize | - 100 GPM |
| e. Cold Reduction Mills | - 6,000 GPM |

GARY WORKS FINISHING FACILITIES - Outfall 034 (ST-17) and
Outfall 039 (STL-6)

I. (Continued)

B. Design (cont'd)

3. Facilities at Terminal Treatment Plant

- a. 3 - Primary Mixing Tanks
- b. 6 - Primary Separation A.P.I. Tanks with Oil and Sludge Removal
- c. 3 - Secondary Mixing Tanks with Aerators
- d. 3 - Flocculator-Clarifiers with Oil Removal
- e. 1 - Control House with Lime Feed, Chemical Feed, Waste Pickle Liquor Feed, Five Centrifuges, Filter Press, Drag Out Tanks, Oil Concentration and Storage Tanks

C. Effluent discharged to Final Oil Separator for final treatment.

II. Final Oil Separator - Outfall 034 (ST-17) - placed in Operation June 1971

A. Type of Treatment

Facility consists of settling basins complete with oil skimming, oil concentration tank and sludge drying bed.

B. Design

- 1. Two (2) basins each with four (4) cells, oil skimmers and concentration tank.
 - a. Flow - 34,600 GPM
 - b. Retention Time - 58 Minutes
- 2. Sludge drying bed with tile underdrain return piping to basins.

C. Effluent discharged to ST-17.

GARY WORKS FINISHING FACILITIES - Outfall 034 (ST-17) and
Outfall 039 (STL-6)

III. Tin Mill - Chemical Containment and Chrome Treatment System
- Outfall 034 (ST-17) - Placed in Operation March 1979

A. Type of Treatment

1. Chemical Containment System

System consists of a sink roll seal collection system, evaporator modification for the three electrolytic tinning lines and evaporator condensate recycle system.

2. Chrome Treatment System - Facilities are provided at the No. 1 Tin Free Steel Line to collect the chrome plating solution rinse water and at the three electrolytic tinning lines to collect the spent dichromate solution and the rinse water from the dichromate treating section of the line.

B. Design

1. Chemical Containment System - Electrolyte losses are collected from the plating and the recirculating pump area. They are segregated from all other process water and are transferred to a holding tank. The collected material is then pumped through a pressure filter to remove any accumulated tin sludge and insoluble impurities and returned to the electrolyte systems.

The evaporators were modified to permit recycle of the normal carry-over of phenol and thereby eliminate discharge.

2. Chrome Treatment System - The collected flow is pumped to the new treating facilities located at the Waste Acid Plant. The waste is reacted with ferrous iron in waste pickle liquor in a tank with sufficient residence time to permit the chemical reduction of hexavalent chrome to trivalent chrome. The reactants then flow to a second tank where the acid is neutralized with lime slurry from a new lime slurry tank.

- C. There is no direct discharge from the chemical containment system. The treated effluent from the chrome control system is discharged through an existing sewer system to the Terminal Treatment Plant for further treatment.

GARY WORKS FINISHING FACILITIES - Outfall 034 (ST-17)
and Outfall 039 (STL-6) - (continued)

IV. North Sheet Mill Oily Waste Treatment Plant - Outfall 034
(ST-17) - Placed in Operation - 1964

A. Type of Treatment

System consists of A.P.I. separators, oil separation tanks, oil concentration tanks and dragout tanks.

B. Design

1. Gravity Oil Separators - Four (4)

- a. Flow - 10,500 GPM
- b. Retention Time - 5.4 Minutes
- c. Four (4) Primary Oil Separator Tanks with Mechanical Oil Skimmers and Bottom Sludge Scrapers

2. Oil Separation Tanks - Five (5)

3. Oil Concentration Tanks - Three (3)

4. Dragout Tanks with Oil Skimmers and Sludge Scrapers - Two (2)

C. Effluent discharged to Terminal Treatment Plant for further treatment.

V. 84" Hot Strip Mill Facilities - Outfall 039 (STL-6) -
Placed in Operation July 1967

A. Type of Treatment

System consists of scale pits, ultra high-rate gravity filters, backwash thickener, vacuum filters and chemical feed equipment to treat the process water from the 84" Hot Strip Mill.

B. Design

1. Roughing Section Scale Pit

- a. Flow - 38,000 GPM
- b. Contains one (1) Primary Pit, three (3) Secondary Pits and Oil Skimming Facilities

GARY WORKS FINISHING FACILITIES - Outfall 034 (ST-17)
and Outfall 039 (STL-6) - (continued)

V. Continued

B. Design (cont'd)

2. Finishing Section Scale Pit

- a. Flow - 50,000 GPM
- b. Pit is divided into three (3) cells with continuous dragout mechanism and oil skimming facilities.
- c. Effluent to Filtration Plant

3. Run-Out Table Scale Pit

- a. Flow - 60,000 GPM
- b. Pit is divided into three (3) cells with continuous dragout mechanism
- c. Effluent returned to mill process water system.

4. Filtration Plant

- a. Flow - 39,600 GPM
- b. Twelve (12) ultra high-rate, gravity sand filters with wet well, lift pumps, backwash thickener, two (2) vacuum filters, air blowers and chemical feed system.

C. Effluent is discharged to STL-6

VI. Waste Acid Disposal

A. Type of Treatment

- 1. Deep Well Disposal - Placed in Operation in August 1967.
- 2. Neutralization System - Placed in Operation in October 1967

GARY WORKS FINISHING FACILITIES - Outfall 034 (ST-17) and
Outfall 039 (STL-6) - (continued)

VI. Continued

B. Design

1. Deep Well Disposal System

- a. Flow - 300 GPM waste hydrochloric or sulfuric acids.
- b. Holding sumps, storage tanks, filtration equipment and pumps.

2. Neutralization System

- a. Flow - 260,000 gallons per month miscellaneous acids
- b. Holding sumps, neutralization tanks, lime feed system, pumps and sludge lagoons.

C. No Discharge to Outfalls